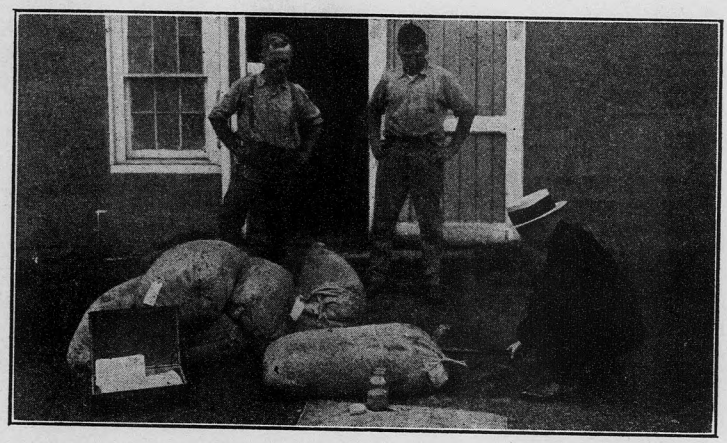
FERTILIZER ANALYSES

CONTROL SERIES—PUBLISHED QUARTERLY. FEBRUARY ISSUE 1924—No. 105

"FERTILIZER INSPECTOR IN ACTION"



"MAKING SURE THE FARMER GETS HIS MONEY'S WORTH"

Honest Manufacturers Welcome Inspection for It Prevents Dishonest Competition

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STATE FERTILIZER DEPARTMENT

Controlled By

UNIVERSITY OF MARYLAND

COLLEGE PARK, MD.

Entered at College Park (Md.) Post-office as Second-Class Matter.

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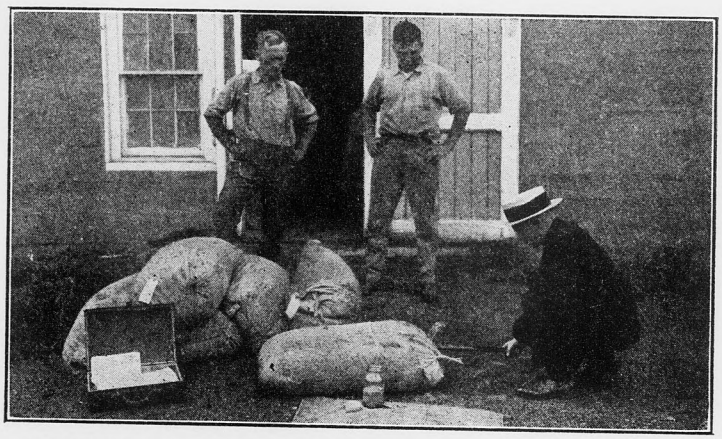

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FERTILIZER ANALYSES

From July 1, 1923, to January 1, 1924.

Compiled and edited under the supervision and direction of Neil E Gordon, State Chemist, and Leslie E. Bopst, Chemist in Charge of Fertilizer, Feed and Lime Departments.

BOARD OF REGENTS—UNIVERSITY OF MARYLAND

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ADVISORY COMMITTEE

At the instigation of the executives of the State Fertilizer Law there was a committee appointed in February, 1923, whose function is to act in an advisory capacity to the executives in the solving of problems arising in the enforcement of this law. This committee consists of nine men: three representing the agricultural interests, and appointed by E. P. Cohill, President of the Maryland Agricultural Society; three representing the fertilizer trade, and appointed by Gustavus Ober, Jr., President of the National Fertilizer Association, and three from the University of Maryland, appointed by President Woods.

The members of this committee are:

Agricultural Interests	Fertilizer Trade	University of Maryland
Mr. F. W. Mish	Mr. H. W. Detrick	Dr. H. J. Patterson
Mr. C. C. Gelder	Mr. A. T. Dukes	Dr. A. G. McCall
Mr. G. I. Gardiner	Mr. E. L. Winder	Dr. E. C. Auchter

The first meeting of this committee was held in Baltimore, April 13, 1923. Among the more important matters decided at this meeting was the publishing, in pamphlet form, semi-annually, all fertilizer registrations, and to allow manufacturers a tolerance of 20% (1/5 to 2/5%) when stating the sources of the plant foods which go to make up their respective fertilizers.

Subsequent meetings have been held at various times to discuss the problems arising in the enforcement of this law.

STATE FEED, FERTILIZER AND LIME DEPARTMENT

N. E. Gordon, Ph. D., State Chemist.

L. E. Bopst, B. S., Assistant State Chemist.

L. H. Van Wormer, M. S., First Assistant Chemist.

A. L. Flenner, B. S., Assistant Chemist.

H. R. Walls, Assistant Chemist.

E. C. Donaldson, M. S., Assistant Chemist.

F. R. Darkis, M. S., Assistant Chemist.

O. H. Reinmuth, B. S., Assistant Chemist.

The inspection, analysis and control work of the fertilizer, feed and lime trade is carried on by the State Department, but the State Department is so related to the chemical work of the University that the other men of the Chemical Staff who are mentioned below may be called on in time of extra work. Also it is the purpose of the majority of this Chemical Staff to be carrying on some investigations which bear directly or indirectly on the properties of feeds, fertilizers and limes.

CHEMICAL STAFF

N. E. Gordon, Ph. D., Head of Chemistry Department.

Physical Chemistry.

M. R. Haring, Ph. D., Asst. Prof.
E. G. Van den Bosche, B. S., Asst.

Organic Chemistry.

M. Kharasch, Ph. D., Asso. Professor.
M. Grafflin, B. S., Assistant.

Industrial Chemistry.

L. B. Broughton, M. S., Professor.
J. H. Gardner, Ph. D., Asst. Prof.
J. D. Scheuch, M. S., Assistant.

Inorganic Chemistry.

E. B. Starkey, M. S., Instructor.
D. Lichtenwalner, M. S., Instructor.
J. W. Elder, B. S., Assistant.

Analytical Chemistry.

R. C. Wiley, M. S., Associate Professor.

INTRODUCTION

The fertilizer inspection work, performed from August 1, 1923, to January 1, 1924, and conducted in accordance with the Fertilizer Law in effect June 1, 1922, regulating the sale of commercial fertilizers, consisted in the registration of brands to be offered for sale; inspection of methods of labeling and selling; collection and analysis of official samples; publication of the results obtained; and the analysis of special samples forwarded to this department by residents of the State.

State Fertilizer Inspectors obtained 1,028 samples of commercial fertilizers from shipments found being offered for sale throughout the State during the year 1923. Three hundred and ten of these samples are covered by the reports in this bulletin and represent sales made during the fall season. All of these samples were analyzed for the purpose of determining the correctness of the guarantees found on the sacks or attached cards. Our reports will show some deficiencies. The majority of them, as will be noted, exceed their guarantees—many by substantial "overages." In fact the inspection work of the past six months discloses very few failures on the part of the manufacturers to live up to their guarantees. It was humanly impossible to secure samples of every brand of fertilizer that was offered for sale. However, our records show 64% brands sampled of the total number registered, which compares very favorably with the Control Work of the majority of States.

It is indeed gratifying to note that as a rule the analyses run above the guarantees, and that few deficiencies were found. Instances of short weight have been noted, and it seems that this discrepancy has been found due in most cases to incompetent labor. When brought to the attention of the manufacturer, however, reimbursement has always been made. The inspection work has been thorough, and the fertilizer industry is so well regulated and controlled that there appears to be little disposition on the part of most manufacturers to evade the law. However, there are a few firms in our State, the number of which may be counted upon the fingers of one hand, who still show a tendency towards dishonest practices, and a sharp watch is kept upon their products at all times.

TO THE CONSUMER

As previously stated, the Maryland Fertilizer Law exists largely for the protection of the consumers, and the honest manufacturers. However, the State Fertilizer Department expects the users of fertilizing materials to co-operate to the extent at least of not buying products that are improperly labeled for such a fertilizer may be of inferior grade. Study the guaranteed analysis, given on the container, using this information as a guide in the selection of fertilizers that suit your particular need. It is to be regretted that many farmers are guided more by the price of a fertilizer than by the analysis. But they should always bear in mind the fact that **high-grade fertilizers are always the cheapest in the long run.**

Our records show an approximate expenditure of between four and five millions of dollars for fertilizers by Maryland farmers last year. The protection of fertilizer buyers in the expenditure of this tremendous sum is of great importance. It is to this task that fertilizer inspection is devoted. This bulletin is published for the purpose of giving to farmers, and other purchasers, information relative to Commercial Fertilizers, to the end that purchasers may know the percentages of nitrogen, phosphoric acid and potash. Figures in this bulletin show the percentages guaranteed by the manufacturer and the percentages found by the State Department's Chemists after analysis. The publication of the figures contained in this bulletin serve as a protection to purchasers of fertilizers, and are relied upon by dealers and farmers generally, yet it has to be made use of if the consumer is to be protected. Therefore,

DO NOT THROW THIS BULLETIN AWAY.

READ IT. USE IT WHEN YOU BUY FERTILIZERS.

TO SELLING AGENTS.

1. Before engaging in the sale of fertilizers, acquaint yourself with the provisions of the Maryland Fertilizer Law.

2. Represent only those concerns that show a good record of inspection.

3. Study the soil and crop requirements of your territory, and recommend only those brands that you know will bring results.

4. Know your product and be able to inform your trade of the ingredients and the proportions of same which go to make up your goods.

5. Make sure the farmer is satisfied with his purchase, for a satisfied customer means a repeat order.

6. Keep in mind at all times that the same penalty attaches to exposing or offering unlabeled fertilizers for sale, as for selling the same, and that the local dealer is directly responsible for fertilizer in his possession failing to meet the requirements of the law. (Dealers should specify on all orders that the manufacturers comply with the State Law.) If you are in doubt regarding any manufacturer, or fertilizer, write for information. This department is always ready to advise you.

TO MANUFACTURERS

Each brand of fertilizer must be registered with the State Fertilizer Department, preferably upon blank registration forms furnished by this department. In filling out the registration form, a true statement of the guaranteed analysis, and of all ingredients of which the fertilizer is composed must be given, and these cannot be lowered. At a meeting of the Fertilizer Committee, it was decided that a tolerance of 20% (1/5 to 2/5%) would be allowed when stating the percentages of the ingredients used.

The State Fertilizer Law requires manufacturers to secure registrations before the fertilizer is sold. Do not wait for notification and then write an apologetic communication to the effect that this was overlooked in the rush of work. This precipitates a condition that is not pleasant for any of the parties concerned.

Most manufacturers and dealers recognize that only by supporting the fertilizer law can they do honest business without dishonest competition. Consumers likewise find that the law is of immense help to them and are becoming more discriminating, consequently, the dishonest manufacturer is finding it harder and harder to find customers.

It is not the intention nor the policy of the Fertilizer Department to see how much dissatisfaction we can arouse, nor how many prosecutions we can instigate, but rather to carry on a constructive control in order that the sale of good fertilizer may be promoted. And it should be the purpose of all fertilizer regulatory measures to require the manufacturers of fertilizers to prepare a wholesome article and to honestly inform the public, as to the character, type and kind of fertilizer offered. It is our aim to cause as little interference with legitimate business as is consistent with the Maryland Fertilizer Law.

COMMERCIAL FERTILIZERS

The value of any commercial fertilizer depends mainly upon the amount of available plant food that it contains, and this availability depends largely upon the materials of which the fertilizer is composed. Certain substances contain plant food elements in large quantities, but when applied to the soil they show very little, if any, immediate benefit.

Ground leather, hair, waste, hoof, horn or peat, which contain varying proportions of nitrogen, are materials in which the plant food is largely unavailable, and, hence, our law does not allow such material to be used for fertilizer unless chemically treated. Consequently, the Maryland law prohibits the use of these untreated materials as constitutents of mixed fertilizers and no fertilizer containing these materials will be registered.

For the protection of farmers most of the States have provided laws for the regulation of the sale of commercial fertilizers, and these laws, while varying somewhat in detail in different States, should all have the same objects in view.

1. To protect the consumer by requiring the manufacturer to live up to his own set standards of guarantees.

2. To protect the legitimate licensed manufacturers and dealers against those who try to sell fertilizers outside the law.

3. To promote harmony in all phases of dealings among consumers, manufacturers and those charged with the control work.

The Maryland Fertilizer Law requires that every bag, barrel or package of fertilizer must bear plainly on the outside of same in the order herein stated the following:

The net weight of the contents of the package or lot in pounds.

The brand name or trademark.

The grade as (4-8-5), etc.

Guaranteed analysis in percentages.

Total nitrogen and/or its equivalent to Ammonia.

Water Soluble Nitrogen and/or its equivalent to Ammonia.

Available Phosphoric Acid.

Water Soluble Potash.

Name and address of manufacturer.

The law also requires the guaranteed analysis together with the sources of the plant food to be registered with the State Fertilizer Department. The request for registration of each brand is carefully examined before it is accepted, and if it is found that any objectionable materials are used, that particular brand is not registered and the sale is prohibited.

There are more brands of fertilizers registered and sold in Maryland than are really needed. A campaign has been started in some States to reduce the number of brands to the smallest number necessary to supply the required amount of plant food. The need of each State is studied and the brands suitable to those needs are recommended. Maryland has its "Maryland Twelve"; Delaware, its "Delaware Dozen"; Ohio, Pennsylvania and other States have selected the several brands that are deemed necessary for their soil and crop requirements. This movement, while still comparatively new, has met with decided success. Many of the larger firms have signified their intention of reducing the number of brands to be offered for sale this year, and one of the largest has decided to place upon the market only about one-half the number registered last year.

High analysis fertilizers contain 14 or more units of available plant food, and as has been previously stated, plant food is cheaper per unit in a high analysis fertilizer than it is in a low analysis mixture. The cost of mixing, bagging, handling and freight on a low-grade goods is the same as on a high-grade mixture.

Two of the greatest problems confronting the farmer are transportation and labor. These two factors are involved in the price of fertilizers, as well as in the cost of production of crops. Farm labor is expensive as well as scarce. Is it not better to buy two tons of a 3-12-3 mixture than three tons of 2-8-2 fertilizer, which contains the same amount of plant food?

Thus the reduction of the number of brands, and the use of high analysis fertilizers will help the farmer in many respects.

Low-grade fertilizer is a poor investment, as is low-grade goods of any kind. The buyer must understand the analysis on the container and buy fertilizers for their quality.

The trouble seems NOT to be that the manufacturer is attempting to sell goods below the quality that is guaranteed, but that the farmer is buying materials which the branding plainly shows are inferior, doubtless because they are cheaper than the better grades.

The manufacturer is going to sell everything for which there is a demand, and the law can do no more than require him to mark the goods as to their true grade. There is no protection for one who buys a material that bears an analysis showing it to possess only a small percentage of plant food.

FREE ANALYSIS OF FERTILIZERS FOR FARMERS

Section 9 of the law (Act 1920) provides that any purchaser of fertilizer, provided he is not a manufacturer or agent of the same, may have taken in the presence of a disinterested witness, samples of fertilizer and forward same with all transportation charges prepaid, to the State Fertilizer Department for analysis, provided that samples so taken shall be from unbroken bags, which have not been damaged or injured in any way, and which have not been in the possession of the owner more than thirty (30) days, provided further that said samples be taken from at least 5% of the bags comprising the brand purchased. In addition, each sample shall be fully described on forms furnished by the State Department, said description giving a full and complete statement of the time and place of sampling, of all marks on the bag and of all facts relating to the same. This description must be signed by the purchaser of the fertilizer, the person drawing the sample, and the witness. This information shall not be sent to the State Department until the report of analysis has been received by the sender of the fertilizer.

We desire here to emphasize this gratuitous analysis of fertilizer, which apparently does not seem to be fully understood by those concerned. Complete understanding of these points will greatly increase the effectiveness of our work and its value, both to sellers and users of fertilizers. The State Department every year analyzes a large number of samples sent by individuals, representing fertilizers bought by them for their own use. The object of the sender is to learn whether the fertilizer contains all that is guaranteed, and if it does not, to provide evidence for a claim against the seller. (It is absolutely necessary that the sample should be taken essentially in the way prescribed by law and that is with a properly executed blank, and in the presence of a witness.) If this is not done, it will be impossible for the department to give an official analysis.

Farmers, who have bought several tons of fertilizer and used all but one bag or a part of one bag and then decide to have it analyzed, should realize that this one bag does not represent the whole amount purchased. In the first place, fertilizers are not always uniform in composition, due to incomplete mixing and, in the second place, the small amount left over may have gained or lost moisture according to the place of storage and the weather conditions, and a sample taken from so small a portion, after considerable time has elapsed, may very likely run either better or poorer than the whole in its original condition. It would be very seldom that it would represent the whole lot just as it was purchased. In fact, the results of such an analysis would be worse than useless because they would be misleading. A compliance with the law regarding samples of this nature makes the analysis of public interest and value, which is the only justification for doing the work at State expense, and it is the way by which it is possible for the sender to learn the true composition of the stock sampled, and to prove its composition if a claim for rebate is made.

During the year 1922 there were 972 brands registered by 83 companies. These represent 191 different analyses; that is, 2-8-2, 1-8-1, 0-12-5, etc., 127 of which represent complete fertilizers; 26 ammonia and phosphoric acid mixtures; 20 phosphoric acid and potash; 1 ammonia and potash, and 17 miscellaneous. The inspectors took 1,028 samples, of which 865 were analyzed. The difference, 163, represent duplicates of samples previously taken, or those taken for information only. Eighty-three additional analyses were made upon samples sent by residents of the State.

There were approximately 155,700 tons of fertilizer used in Maryland in 1922. Complete fertilizer comprised 99,413 tons; phosphoric acid and potash mixtures, 12,684 tons; ammonia and phosphoric acid, 2,687 tons; acid phosphate, 28,868 tons; and single ingredients, such as nitrate of soda, fish, kainit, "mixed to order," etc., 12,034 tons.

Those containing 14 or more units of plant food are as follows:

Complete fertilizer, 47,295 tons; phosphoric acid and potash, 10,846 tons; ammonia and phosphoric acid, 1,367 tons, and acid phosphate, 26,405 tons, making a total of 85,913 tons.

TABLE No. 1

COMPARISON OF REGISTRATIONS IN 1921-1922

	1921	1922
Number of different analyses registered	187	191
Representing complete fertilizers	118	127
RepresentingPhosphoric Acid and Potash	14	20
Representing Ammonia and Phosphoric Acid	36	26
Representing single ingredients	19	17

COMPARISON OF TONNAGE REPORTS ON TEN LEADING ANALYSES

1921		1922	
Grade	Tonnage	Grade	Tonnage
2-8-2	9,780	2-8-5	9,349
1-9-3	7,917	2-8-2	9,265
1-8-1	7,793	1-9-3	8,581
7-6-5	4,457	7-6-5	7,456
1-8-2	4,129	0-12-5	7,070
5-8-5	3,559	2-9-2	6,529
2-8-5	3,515	1-8-4	5,899
1-8-4	3,341	1-8-1	4,949
1-9-2	3,235	4-8-4	4,247
2-10-2	3,132	1-10-2	3,319

The above table gives the ten biggest sellers in Maryland for the years 1921 and 1922, with the exception of 16% acid phosphate, which, of course, stands first each year with 24,080 tons in 1921, against 25,684 in 1922. It is indeed gratifying to note the increased use of a higher analysis goods. In 1921, 53% of the mixed fertilizer, including acid phosphate, contained 14 or more units of plant food, while in 1922 the amount was 55%.

In 1922 the 2-8-5 brand ranked first in the total number of tons sold, while the 2-8-2 brand, which was first in 1921, was a close second. However, tonnage reports show a tendency towards the use of high-grade fertilizers.

TONNAGE REPORT OF THE VARIOUS GRADES OF FERTILIZERS USED IN MARYLAND IN 1922

In view of the fact that certain firms were rather dilatory in filing their tonnage reports for the year 1922, and because there were several typographical errors in the printing of the report which appeared in the August issue—Bulletin No. 102—we are taking advantage of this opportunity of giving to the public a corrected report of the number of tons of each brand of fertilizer registered with the State Fertilizer Department which were sold in 1922.

CORRECTED FERTILIZER TONNAGE FOR THE YEAR 1922

Guaranteed	Tons	Guaranteed	Tons
0-12-3	511	1-8-4	5,899
10-5-0	696	1-9-3	8,581
5-10-0	71	2-9-2	6,529
5-7-3	24	2-8-3	2,225
0-8-7	39	½-8-4	76
1-10-4	47	5-8-0	208
0-10-5	1,684	4-8-1	3
7-8-0	14	2-11-0	212
3-6-6	440	3-8-2	125
3-7-5	70	1-10-2	3,319
2-8-5	9,349	2-10-1	37

Guaranteed	Tons
3-8-4	878
4-8-3	172
3-9-3	30
1½-10-3	100
4-6-5	123
2½-12-0	29
1-11-2	62
1-8-6	272
10-4-0	260
3-7-4	21
7-6-1	65
2-12-0	57
2-10-2	2,030
3-9-2	283
0-12-2	159
½-9-4	474
1-11-2	62
3-8-3	1,525
0-10-4	818
1¼-9-2	201
½-10-0	99
2-9-3	917
½-9-2	166
1½-8-5	4
2-10-3	15
4-7-4	17
3-8-1	155
1¼-13-0	4
6-6-0	8
½-7-2	34
0-10-0	83
1½-9-1	91
4-6-4	13
5-8-2	75
¼-10-1	13
0-4-7	54
1¼-10-2	607
2-10-0	153
2-8-2	9,265
1-8-3	568
¾-8-3	8
1¼-9-1½	45
0-10-2	1,004
1-10-1	261
0-12-0	344
1¼-8-2	158
1-9-2	1,649
3-8-0	16
½-8-2	1,517
½-10-1	361
1-8-2	2,582
1-10-0	289
2-8-1	297
1¾-7-2	477
0-4-7	42
1-9-1	10
0-7-3	42
2-8-0	21
0-8-1¼	45
½-8-1	175
1-8-1	4,949
0-8-2	150
¼-10-0	20
0-16-0	25,684
0-14-0	721

Guaranteed	Tons
0-8-5	409
1½-8-3	143
3½-5¼-4	31
2½-10-0	102
3-10-0	9
2-8½-2	156
½-8-3	226
1¾-7-3	274
5-5-2	12
10-2-0	134
4-10-0	9
1-8-5	14
2-7-5	77
2-8-4	1,406
2-11-1	11
1-9-4	584
2-6½-4½	69
Kainit	2,233
Agricultural Salt	6
Sulfate of Potash	471
4-8-4	4,227
5-6-7	170
7-6-5	7,456
5-7-5	1,461
4-8-6	294
0-12-5	7,070
2-8-10	1,448
7-8-5	5
2-12-2	1,652
10-5-2	107
2-10-6	146
2-10-4	785
5-8-5	3,090
5-8-7	199
2-16-2	29
5-6-5	1,082
0-12-4	253
3-8-5	558
1½-14-0	140
2½-20-5	49
1½-17-	56
1½-10-5	270
2¼-10-4	62
4-8-7	166
7-8-3	65
2-8-7	63
4-8-5	884
2-12-6	98
1½-12-5	442
6-6-8	50
2-11-3	76
3-8-7	496
3-9-5	63
6-8-8	35
4-12-8	3
1-12-5	184
0-14-5.6	27
1.41-11.2-5	28
2.8-11.5-2.8	2
2.6-10.6-6.6	2
2.12-12.7-2.1	2
0-12-6	251
2-9-5	828
0-12-10	34
4-9-3	10

Guaranteed	Tons	Guaranteed	Tons
0-13-0	1,901	2-8-8	12
Pure and Fine Ground Bone	1,450	1½-19-0	31
Mixed to Order	5,744	1-12-3	94
Nitrate of Soda	779	4-7-4	47
Sulfate of Ammonia	511	2-8-6	108
Ground Fish	32	1-6-10	2
Tankage	341	1-11-4	121
Muriate of Potash	360	1-10-5	192
3-12-3	514	1-7-1	119
5.7-6-5	5	0-8-0	135
5-8-3	13	1-6½-1	80
6-8-3	12	1¾-7-0	23
¼-11-5	111	½-8-0	17
3-7-7	460	2¼-1-1½	60
2-7-5	366	2-2-2	62
4-10-6	57	6-0-0	94
0-6-3	23	0-7-2	39
1-8-0	9		
		Total	155,706

EXPLANATION OF TABLES AND VALUES

Since the analysis in our laboratory gives the percentage or pounds per hundred, it is only necessary to multiply the price per pound by 20 in order to get the value of one per cent for one ton of fertilizer. This is designated in the following table as the value per unit. A unit is one per cent of one ton, or twenty pounds.

Table for Calculating Fertilizer Values.

	Per Unit
(1) Nitrogen calculated as Ammonia	$3.75
(2) Available Phosphoric Acid—	
(a) In mixed fertilizers or in dissolved rock	.75
(b) In tankage or ground bone	.60
(3) Insoluble Phosphoric Acid	.20
(4) Potash	.75

VALUES

In order to compare values of fertilizers multiply the percentage of each plant food in the fertilizer by the respective value per unit given in the table, and add the results together: For example, in the case of a complete fertilizer with an analysis of 4-8-5, we would have 4 per cent of ammonia, 8 per cent of phosphoric acid and 5 per cent of potash. Since, by the above table, ammonia is worth $3.75 per unit, available phosphoric acid $0.75, and potash $0.75, we have $24.75.

4 x $3.75 = $15.00 value of ammonia in 1 ton

8 x .75 = 6.00 value of phosphoric acid in 1 ton

5 x .75 = 3.75 value of potash in 1 ton

$24.75 value of fertilizer in 1 ton

TABLES

The tables on the following pages are the result of the analysis of fertilizers which have been sampled in various parts of the State from July, 1923, to January, 1924. The columns marked "Found" give the analysis of the fertilizers as determined in our laboratories, while the columns marked "Guaranteed" give the analysis guaranteed by the manufacturers of the fertilizers.

In view of the fact that there seems to be some misunderstanding as to what the terms "Value per ton Found" and "Value per ton Guaranteed" really mean, a few words of explanation will no doubt tend to clarify this situation. As it is necessary to have some financial means of comparing the different fertilizer values, and not being acquainted with the different overhead (expenses) of the respective manufacturers, the only fair method of comparison is to take the cost of the raw materials to the manufacturers in Baltimore, and use these figures as the basis of our values. Therefore, one can see that these values do not represent the selling price of the fertilizer. To arrive at the selling price, several additional items must be added to the values given in our tables, among which may be mentioned—

1. The cost of mixing.
2. The cost of the bags.
3. Freight charges.
4. Taxes.
5. Bad accounts.
6. The expenses of the office and salesmen.
7. A fair return upon the money invested.

Thus these values only afford a means of comparison of the value of the plant food found and plant food guaranteed, and do not represent the selling price of the various fertilizers.

No.	Name and Address of Manufacturer and Name of Fertilizer	Place of Sampling	H_2O. SOL. AMMONIA		NITROGEN Calculated as AMMONIA.		PHOSPHORIC ACID.				POTASH. K_2O.		Comparative Value Per Ton Found.	Comparative Value Per Ton Guaranteed
							Insoluble		Available					
			Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.		
	American Agricultural Chemical Co., Balto., Md.													
45249	Acid Phosphate 16%	Baltimore					.75		16.65	16.00			$12.64	$12.00
45288	A. A. Quality	Cumberland					1.28		16.17	16.00			12.39	12.00
45237	Basic Lime Phosphate	Rising Sun					1.70		13.20	13.00			10.24	9.75
45395	Big Crop Phosphate 8-5	Baltimore					.70		8.10	8.00	5.40	5.00	10.27	9.75
45367	Dissolved Phos. & Potash 10-2	Baltimore					.95		10.75	10.00	2.12	2.00	9.84	9.00
45368	Fine Ground Bone	Baltimore			2.99	3.00	*25.70	*22.88					26.63	24.98
45369	Fish Guano 1-8-1	Baltimore	.47	.43	1.02	1.00	1.45		8.35	8.00	1.12	1.00	11.22	10.50
45323	Kainit	Baltimore									12.48	12.40		
45324	Matchless Potash Manure 2-8-2	Baltimore	1.60	1.03	2.01	2.00	1.05		7.95	8.00	2.04	2.00	15.24	15.00
45370	Money Saving Phosphate 12-5	Baltimore					.85		12.55	12.00	5.00	5.00	13.33	12.75
45273	Money Saving Phosphate 12-5	Baltimore					.90		11.80	12.00	5.08	5.00	12.84	12.75
45325	Nitrate of Soda	Baltimore			18.52	18.23								
45326	Pathfinder 1-9-3	Baltimore	.76	.43	1.14	1.00	1.50		8.55	9.00	3.04	3.00	13.27	12.75
45371	Pure Bone Meal	Baltimore			4.49	4.50	*21.10	*21.51					29.50	29.79
45327	Red Dragon Guano 2-12-2	Baltimore	1.45	1.03	2.00	2.00	1.30		10.87	12.00	2.04	2.00	17.44	18.00
45372	Rival Fish Compound 2-8-4	Baltimore	1.50	1.03	2.01	2.00	1.15		8.33	8.00	4.00	4.00	17.02	16.50
45328	Victory Phosphate 12-5	Baltimore					.90		12.09	12.00	5.12	5.00	13.09	12.75
45329	Wheat Special 2-12-4	Baltimore	1.66	1.03	1.98	2.00	1.43		11.97	12.00	4.12	4.00	19.79	19.50
	A. A. C. Co. (Bowker), Balto., Md.	Baltimore												
45396	Corn & Grain Grower	Baltimore	.80	.43	1.06	1.00	.85		8.80	8.00	4.00	4.00	13.75	12.75
	A. A. C. Co. (Canton), Balto., Md.	Baltimore												
45274	Baker's Spec. Wht., Corn & Grass Mixture 1-9-2	Baltimore	.51	.43	1.02	1.00	1.00		9.30	9.00	2.16	2.00	12.63	12.00

*Total Phosphoric Acid.

*Total Phosphoric Acid.

45330	Resurgam Guano 1-8-4	Baltimore	.56	.43	1.02	1.00	.85	8.55	8.00	4.00	4.00	13.41	12.75
	A. A. C. Co. (Copes), Balto., Md.													
45275	H. G. Superphosphate 16	Baltimore					1.15	16.05	16.00			12.27	12.00
45373	Potato, Corn & Tobacco 2-8-4	Baltimore	1.99	1.03	2.72	2.00	1.16	8.34	8.00	3.44	4.00	19.27	16.50
45374	Special Phosphate 1-9-3	Baltimore	.68	.43	1.06	1.00	1.00	9.30	9.00	3.00	3.00	13.41	12.75
	A. A. C. Co. (Detrick), Balto., Md.													
45397	Standard Potash Fertilizer	Baltimore	.75	.43	1.09	1.00	1.15	9.55	9.00	3.04	3.00	13.76	12.75
	A. A. C. Co. (W. S. Farmer), Balto., Md.													
45375	Fish Mixture 2-8-2	Baltimore	1.59	1.03	2.05	2.00	1.25	8.05	8.00	2.16	2.00	15.60	15.00
45376	Potash Guano 1-8-4	Baltimore	.70	.43	1.06	1.00	1.40	8.30	8.00	4.36	4.00	13.76	12.75
	A. A. C. Co. (Hess), Balto., Md.													
45250	Special Compound	Baltimore	.41	.43	1.06	1.00	1.15	8.48	8.00	3.90	4.00	13.32	12.75
45251	Wheat, Corn & Grass Manure	Baltimore	1.73	.43	2.19	1.00	1.50	8.10	8.00	2.08	2.00	16.15	11.25
	A. A. C. Co. (Lazaretto), Balto., Md.													
45331	Big Crop Grower 2-8-2	Baltimore	1.57	1.03	2.18	2.00	1.05	7.90	8.00	2.00	2.00	15.82	15.00
45252	Farmers' Choice Brand	Baltimore	1.63	.43	2.04	1.00	1.33	8.22	8.00	2.08	2.00	15.65	11.25
45332	Red Dog Guano	Baltimore	1.51	1.03	2.00	2.00	.90	8.50	8.00	4.04	4.00	17.09	16.50
45377	Spec. Potato & Tomato Fert. 1-8-4	Baltimore	.65	.43	1.06	1.00	1.00	8.70	8.00	3.64	4.00	13.44	12.75
	A. A. C. Co. (Listers), Balto., Md.													
45333	Acid Phosphate H. G. 16	Baltimore					1.67	15.78	16.00			12.17	12.00
45253	Acid Phosphate H. G. 16	Preston					1.03	16.17	16.00			12.33	12.00
45398	Big Four Fertilizer	Baltimore	2.01	1.00	2.32	2.00	.85	8.25	8.00	5.00	5.00	18.81	17.25
45414	Harvest Queen Phosphate	Baltimore	.67	.43	1.06	1.00	1.30	9.65	9.00	3.00	3.00	13.73	12.75
45334	Harvest Queen Phosphate	Baltimore	.48	.43	1.13	1.00	1.43	9.07	9.00	2.92	3.00	13.52	12.75
45335	Potash Mixture	Baltimore					.80	7.45	8.00	5.40	5.00	9.80	9.75
45289	Special Wheat Fertilizer	Dickerson	1.63		2.01	2.00	1.25	8.55	8.00	3.04	3.00	16.48	15.75
	A. A. C. Co. (Patapsco Guano Co.), Balto., Md.													
45336	Acid Phosphate H. G.	Baltimore					.78	16.12	16.00			12.25	12.00
45276	Big Chief Brand 1-9-3	Baltimore	.70	.43	1.08	1.00	1.20	9.40	9.00	3.00	3.00	13.59	12.75
45337	Blood, Bone & Potash	Baltimore	.58	.43	1.01	1.00	1.00	8.10	8.00	1.12	1.00	10.91	10.50
45306	Crow Brand Phosphate	Cockeysville					2.20	13.00	13.00			10.19	9.75
45415	Coon Brand Guano 1-9-2	Baltimore	.60	.43	1.06	1.00	1.15	9.35	9.00	2.36	2.00	12.99	12.00
45307	Guano 2-8-2	Cockeysville	1.62	1.03	2.00	2.00	1.25	8.20	8.00	2.40	2.00	15.70	15.00
45338	Money Maker 1-8-2	Baltimore	.44	.43	1.11	1.00	1.05	7.70	8.00	2.12	2.00	11.74	11.25
45339	Phospho Potash 12-5	Baltimore					.60	11.80	12.00	5.58	5.00	13.16	12.75
45308	Tobacco & Potato Fertilizer	Cockeysville	1.54	1.03	2.00	2.00	1.20	7.60	8.00	4.00	4.00	16.44	16.50
	A. A. C. Co. (Pollock), Balto., Md.													
45254	Acid Phosphate H. G.	Baltimore					1.68	16.17	16.00			12.47	12.00

No.	Name and Address of Manufacturer and Name of Fertilizer	Place of Sampling	H_2O. SOL. AMMONIA		NITROGEN Calculated as AMMONIA.		PHOSPHORIC ACID.				POTASH. K_2O.		Comparative Value Per Ton Found.	Comparative Value Per Ton Guaranteed
							Insoluble		Available					
			Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.		
	A. A. C. Co. (Pollock),	**Balto., Md.**												
45378	Crop Invigorator	Baltimore	.68	.43	.99	1.00	1.05		8.10	8.00	4.20	4.00	13.15	12.75
45255	Special Potato & Tobacco	Baltimore	1.61	1.03	2.00	2.00	.80		9.10	8.00	3.64	4.00	17.89	16.50
45379	Spec. Wheat & Corn Fert. 1-8-2	Baltimore	.48	.43	.99	1.00	1.00		8.20	8.00	2.00	2.00	11.56	11.25
	A. A. C. Co. (Wooldridge), Balto., Md.													
45230	Acid Phosphate H. G.	Preston					.80		16.20	16.00			12.31	12.00
45231	Florida Acid Phosphate	Preston					.65		16.15	14.00			12.24	10.50
45340	Grain & Grass Producer 10-4	Baltimore					.83		9.82	10.00	4.12	4.00	10.63	10.50
45233	Triangle Brand	Baltimore	.75	.43	1.11	1.00	1.05		8.85	8.00	3.74	4.00	13.82	12.75
	American Fertilizing Co., Balto., Md.													
45341	Acid Phosphate H. G.	Baltimore					.50		16.20	16.00			12.25	12.00
45221	Acid Phosphate H. G.	Motters					1.55		15.65	16.00			12.05	12.00
45222	Champion Grain Grower	Motters	.78	.49	1.04	1.00	1.40		8.40	8.00	4.08	4.00	13.54	12.75
45342	Eagle Crop Grower 2-8-2	Baltimore	1.59	.67	2.03	2.00	1.43		7.72	8.00	2.04	2.00	15.22	15.00
45380	Grain & Grass Grower 1-9-3	Baltimore	.77	.49	1.06	1.00	1.45		9.05	9.00	3.08	3.00	13.37	12.75
	Armour Fertilizer Works, Balto., Md.													
45343	Big Crop Acid Phosphate	Baltimore					.35		16.05	16.00			12.11	12.00
45238	Big Crop 2-8-5	Rising Sun	1.24	1.00	2.01	2.00	.70		9.30	8.00	5.04	5.00	18.44	17.25
45279	Big Crop Bone Mixture 2-9-3	Baltimore	1.28	1.00	2.03	2.00	1.05		10.45	9.00	3.00	3.00	17.91	16.50
45256	Big Crop 10-5	Baltimore					.15		10.85	10.00	3.80	5.00	11.02	11.25
45344	Big Crop 12-5	Baltimore					.25		12.05	12.00	4.48	5.00	12.45	12.75
45345	Farmers' Choice	Baltimore	.43	.50	1.16	1.00	1.05		9.35	9.00	3.00	3.00	13.82	12.75
45381	Fish & Potash Mixture 2-8-3	Baltimore	1.20	1.00	2.00	2.00	.75		9.25	8.00	3.16	3.00	16.96	15.75

45280	Grain Grower 2-8-2	Baltimore	1.16		1.86	2.00	.55		8.80	8.00	2.32	2.00	15.43	15.00
45257	Royal Ammoniated Fertilizer	Baltimore	.40	.50	1.01	1.00	.10		9.70	8.00	4.04	4.00	14.12	12.75
	Baltimore Fertilizer Co., Balto., Md.													
45258	Acid Phosphate 16%	Bel Air					.55		16.95	16.00			12.82	12.00
45259	Honest Ammoniated Bone	Bel Air	.95		1.68	2.00	1.05		10.20	8.00	3.00	2.00	14.12	15.00
45260	Honest 2-8-4	Bel Air	.95		1.77	2.00	.50		10.50	8.00	4.28	4.00	15.23	16.50
45261	Honest 2-8-10	Fallston	1.34	.50	2.01	2.00	1.95		8.85	8.00	9.20	10.00	21.47	21.00
45281	Honest 10-5	Baltimore					1.00		10.20	10.00	4.56	5.00	11.27	11.25
45382	Honest 10-2	Baltimore					.95		10.25	10.00	2.00	2.00	9.38	9.00
45346	Old Honesty ½-8-2	Baltimore	.29		.72	.50	1.10		8.90	8.00	2.90	2.00	11.78	9.38
45638	Old Honesty ½-8-2	Rockville	.17		.61	.50	.30		9.50	8.00	2.16	2.00	11.10	9.38
	Baltimore Pulverizing Co., Balto., Md.													
45399	Harvest King	Baltimore	.42		.71	1.00	.85		8.70	10.00	2.08	2.00	10.92	12.75
45383	Royal Compound	Baltimore	1.62	1.04	1.89	2.00	.60		9.10	8.00	3.66	2.00	16.79	15.00
45347	Spring & Fall Mixture	Baltimore					.85		7.02	8.00	2.36	2.00	7.21	7.50
	Baugh & Sons Co., Balto., Md.													
45290	Acid Phosphate 16%	Gaithersburg					.10		17.20	16.00			12.92	12.00
45239	Acid Phosphate 16%	Providence					.20		16.60	16.00			12.49	12.00
45348	Complete Animal Base Fert.	Baltimore	1.36	.60	2.01	2.00	1.10		8.90	8.00	5.04	5.00	18.22	17.25
45240	Complete Animal Base Fert.	Rising Sun	1.58	.59	2.13	2.00	1.10		8.50	8.00	4.70	5.00	18.02	17.25
45384	Double Eagle Phos. 2-10-4	Baltimore	1.52	.59	2.15	2.00	.90		10.10	10.00	4.24	4.00	19.00	18.00
45241	Economical Crop Producer	Colora	.51		1.09	1.00	1.20		8.20	8.00	2.24	2.00	11.89	11.25
45400	Economical Crop Producer	Baltimore	.52		1.08	1.00	.90		8.00	8.00	2.24	2.00	11.91	11.25
45349	Excelsior Guano 1-8-4	Baltimore	.59		1.19	1.00	1.20		8.90	8.00	4.00	4.00	14.38	12.75
45385	General Crop Grower 1-8-1	Baltimore	.51		1.11	1.00	.40		8.50	8.00	1.36	1.00	11.64	10.50
45242	Half & Half	Providence	.77		1.62	1.50	2.70		13.50	10.00	5.00	5.00	18.40	16.88
45282	Lime & Phosphate 13%	Baltimore					1.20		13.20	13.00			10.14	9.75
45386	Phosphate & Potash Mix. 10-4	Baltimore					.55		10.25	10.00	4.16	4.00	10.92	10.50
45416	Phosphate & Potash Mix. 12-5	Baltimore					.75		11.08	12.00	5.40	5.00	12.51	12.75
45350	Phosphate & Potash 12-5	Baltimore					.90		12.80	12.00	5.32	5.00	13.77	12.75
45285	Phosphate & Potash Mix 12-5	Baltimore					1.00		12.00	12.00	5.36	5.00	13.22	12.75
45351	Raw Bone Meal	Baltimore			4.16	4.50	*20.20	*21.50					27.72	29.78
45243	Raw Bone Meal	Providence			4.56	4.50	*20.00	*21.50					29.10	29.78
45244	Wheat Fertilizer, Wht. & Grass	Providence	1.42		2.15	2.00	.20		9.40	8.00	2.12	2.00	16.74	15.00
	Braun Fertilizer Co., Balto., Md.													
45314	General Crop Grower	Baltimore	1.70		3.24	4.00	1.15		11.00	8.00	4.20	4.00	23.78	24.00
45317	H. G. Truck Grower	Baltimore	.62		1.85	3.00	1.90		12.97	8.00	4.02	3.00	17.37	19.50
45315	Special Grower	Baltimore	.71		1.79	2.00	1.60		10.80	8.00	5.62	5.00	19.35	17.25

*Total Phosphoric Acid.

No	Name and Address of Manufacturer and Name of Fertilizer	Place of Sampling	H_2O. SOL. AMMONIA		NITROGEN Calculated as AMMONIA.		PHOSPHORIC ACID.				POTASH. K_2O.		Comparative Value Per Ton Found.	Comparative Value Per Ton Guaranteed
							Insoluble		Available					
			Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.		
	Bryant Fertilizer Co., Balto., Md.													
45352	Formula "E" 2-8-2	Baltimore	1.52	.78	1.86	2.00	1.50	.....	8.40	8.00	2.36	2.00	15.35	15.00
45401	Highest Grade Potash Mix	Baltimore	.....	.....	.....	.....	.30	.....	12.40	12.00	5.00	5.00	13.11	12.75
	Herbert Bryant's Son, Alexandria, Va.													
45291	Alkaline Mixture 10-2	Dickerson	.....	.....	.....	.....	.45	.....	10.05	10.00	2.28	2.00	9.34	9.00
45292	Phosphate Potash 10-4	Dickerson	.....	.....	.....	.....	.50	.....	9.50	10.00	4.20	4.00	10.38	10.50
	Central Chemical Co., Hagerstown, Md.													
45293	Crown Jewel	Smithsburg	.65	.60	1.08	1.00	.65	.....	9.35	9.00	2.84	3.00	13.32	12.75
45294	Empire	Hagerstown	1.56	.....	2.00	2.00	.35	.....	8.45	8.00	10.08	10.00	21.47	21.00
45295	Fish & Potash Compound	Hagerstown	.59	.....	1.14	1.25	.55	.....	7.75	8.00	2.28	2.00	11.91	12.19
45296	Golden Sheaf	Hancock	.72	.60	1.11	1.00	1.00	.....	7.80	8.00	1.24	1.00	11.14	10.50
45387	Gro-All Dissolved Phosphate 16%	Baltimore	.....	.....	.....	.....	1.45	.....	16.45	16.00	.....	.....	12.63	12.00
45219	Gro-All Excelsior	Frederick	1.49	.....	1.80	2.00	.70	.....	7.90	8.00	3.62	4.00	15.54	16.50
45417	Gro-All Grain & Grass Grower	Baltimore	1.31	.60	1.82	2.00	1.45	.....	12.05	12.00	2.16	2.00	17.78	18.00
45297	Pioneer	Hagerstown	.....	.....	.....	.....	.70	.....	7.30	8.00	5.20	5.00	9.52	9.75
45298	Planters' Mixture	Hagerstown	.65	.....	1.06	1.00	.40	.....	8.50	8.00	5.36	6.00	14.46	14.25
45299	Potash Special	Hagerstown	.....	.....	.....	.....	.25	.....	11.65	12.00	5.04	5.00	12.57	12.75
45300	Special Formula 1½-12-5	Hagerstown	1.02	.60	1.50	1.50	.55	.....	11.80	12.00	5.40	5.00	18.64	18.38
45301	Valley Mixture	Hancock	1.60	.60	2.03	2.00	.30	.....	7.80	8.00	2.12	2.00	15.11	15.00
	Devilbiss Bros., New Windsor, Md.													
45223	Acid Phosphate	New Windsor	.....	.....	.....	.....	.63	.....	15.27	16.00	.....	.....	11.58	12.00
45224	Butcher House Phosphate	New Windsor	.33	.35	1.27	1.00	1.20	1.09	10.80	10.00	4.00	4.00	16.10	14.45
45225	Wheat Grower	New Windsor	.46	.....	1.02	1.00	1.30	.....	9.50	8.00	2.36	2.00	12.99	11.25

	Dumont Fertilizer Co., Phila., Pa.													
45388	4-8-5	Baltimore	**3.10**	2.43	**3.19**	4.00	**.90**		**8.10**	8.00	**4.68**	5.00	**21.73**	24.75
45389	1-8-4 Brand	Baltimore	**1.05**	.61	**1.19**	1.00	**.95**		**8.35**	8.00	**3.38**	4.00	**13.45**	12.75
45262	1-8-4 Brand	Baltimore	**.62**	.50	**1.06**	1.00	**1.80**		**8.55**	8.00	**4.40**	4.00	**14.05**	12.75
45390	1-8-5	Baltimore	**1.24**		**1.34**	1.00	**.95**		**7.50**	8.00	**5.04**	5.00	**14.63**	13.50
45263	Pure Ground Bone	Baltimore			**2.48**	3.00	***27.97**	*22.30					**26.08**	24.63
45391	2-8-5	Baltimore	**1.45**	1.21	**1.54**	2.00	**.85**		**8.35**	8.00	**5.00**	5.00	**15.96**	17.25
45418	12-5	Baltimore					**1.20**		**11.53**	12.00	**5.04**	5.00	**12.67**	12.75
45245	12-5	Ridgely					**.70**		**12.90**	12.00	**5.24**	5.00	**13.75**	12.75
45419	12-3	Baltimore					**1.36**		**11.84**	12.00	**3.40**	3.00	**11.70**	11.25
	Edelen Bros., Balto., Md.													
45283	Wheat & Grain Mixture 1-8-1	Baltimore	**.58**	.60	**.99**	1.00	**1.25**		**9.05**	8.00	**1.12**	1.00	**11.59**	10.50
	Farmers & Planters Co., Salisbury, Md.													
45234	Fish Mixture 2-8-2	Salisbury	**.45**	1.52	**1.44**	2.00	**1.20**		**7.43**	8.00	**3.78**	2.00	**14.05**	15.00
45235	General Crop Grower 1-10-2	Salisbury	**.30**	.94	**.78**	1.00	**2.33**		**9.02**	10.00	**1.88**	2.00	**11.58**	12.75
45236	Special Fish Mixture 2-8-5	Salisbury	**.65**	1.52	**1.62**	2.00	**1.10**		**8.90**	8.00	**5.32**	5.00	**15.97**	17.25
	Ford Motor Co., Dearborn, Mich.													
45220	Ammonia Sulphate	Chestertown			**25.52**	25.30								
	F. Mehring Fert. Works, Inc., Key mar, Md.													
45226	Big 4	Bruceville	**.51**		**1.06**	1.00	**.80**		**10.00**	9.00	**3.36**	3.00	**14.01**	12.75
45227	Mammoth Truck Grower	Bruceville	**1.14**	1.58	**1.98**	2.00	**.50**		**8.50**	8.00	**5.00**	5.00	**17.66**	17.25
45228	Potash Mixture	Bruceville					**1.10**		**11.90**	12.00	**5.24**	5.00	**13.08**	12.75
	Griffith & Boyd Co., Balto., Md.													
45353	Farmers' Potato Manure	Baltimore	**.70**		**1.18**	1.00	**1.30**		**8.50**	8.00	**6.32**	6.00	**15.81**	14.25
45354	Farmers' Queen 1-9-3	Baltimore	**.75**	.24	**1.16**	1.00	**.90**		**9.10**	9.00	**3.36**	3.00	**14.08**	12.75
45392	Fish & Blood Mixture 1.75-7-0	Baltimore	**1.16**	.97	**1.88**	1.75	**.70**		**8.50**	7.00			**13.57**	11.81
45355	Fish, Blood & Potash	Baltimore	**.89**	.37	**1.91**	1.75	**1.75**		**7.10**	7.00	**2.32**	2.00	**14.58**	13.31
45246	Fish & Potash Guano	Rising Sun	**1.11**	.37	**1.93**	1.75	**.55**		**7.75**	7.00	**3.20**	3.00	**15.56**	14.06
45356	H. G. Fish & Potash Mixture	Baltimore	**1.93**		**2.15**	2.00	**.95**		**11.18**	12.00	**7.24**	8.00	**22.07**	22.50
45357	Special Guano 2-8-5	Baltimore	**1.28**		**2.18**	2.00	**1.20**		**9.35**	8.00	**5.04**	5.00	**19.21**	17.25
45284	Special Peerless Guano ½-8-1	Baltimore	**.34**		**.75**	.50	**.85**		**8.00**	8.00	**1.54**	1.00	**10.14**	8.63
	Hampstead Fertilizer Co., Hampstead, Md.													
45309	Acid Phosphate 16%	Hampstead					**.15**		**18.10**	16.00			**13.61**	12.00
45310	1-8-2	Hampstead	**.61**	.50	**1.16**	1.00	**.55**		**9.65**	8.00	**2.40**	2.00	**13.50**	11.25
45311	1-8-4	Hampstead	**.32**	.50	**.99**	1.00	**.50**		**9.20**	8.00	**4.32**	4.00	**13.95**	12.75
45312	2-8-4	Hampstead	**.60**	.50	**1.18**	2.00	**.65**		**9.75**	8.00	**4.12**	4.00	**14.96**	16.50
	J. G. Harr, Balto., Md.													
45313	Fish & Potash Mixture	Brooklandville	**1.28**	.75	**1.98**	2.00	**.95**		**9.85**	8.00	**2.30**	2.00	**16.74**	15.00

*Total Phosphoric Acid

No.	Name and Address of Manufacturer and Name of Fertilizer	Place of Sampling	H_2O. SOL. AMMONIA		NITROGEN Calculated as AMMONIA.		PHOSPHORIC AC.D.				POTASH. K_2O.		Comparative Value Per Ton Found.	Comparative Value Per Ton Guaranteed
							Insoluble		Available					
			Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.		
	Horsey, Roe & Co., Greensboro, Md.													
45247	Crop Grower 1-8-4	Greensboro	.26		1.06	1.00	1.80		8.60	8.00	4.36	4.00	13.88	12.75
45248	12-5	Greensboro					.70		13.80	12.00	5.00	5.00	14.24	12.75
	Hubbard Fertilizer Co., Balto, Md.													
45302	Alkaline 12-5	Smithsburg					.45		12.25	12.00	5.24	5.00	13.21	12.75
45402	High Grade Potash Mixture	Baltimore					.90		9.80	10.00	4.36	4.00	10.80	10.50
45393	1-9-3 Fertilizer	Baltimore	.67		1.11	1.00	.65		9.55	9.00	3.36	3.00	13.97	12.75
	M. P. Hubbard & Co., Inc., Balto., Md.													
45394	Celebrated Phosphate 2-8-2	Baltimore	.79		1.75	2.00	.30		9.60	8.00	2.60	2.00	15.77	15.00
45420	Dissolved Phosphate	Baltimore					.45		16.05	16.00			12.13	12.00
45421	Dissolved Phosphate	Baltimore					.30		15.96	16.00			12.03	12.00
45403	Dissolved Phosphate	Baltimore					.10		17.20	16.00			12.92	12.00
	Lancaster Chemical Co., Lancaster, Pa.													
45681	Potash Special	Perryville					.45		12.95	12.00	5.40	6.00	13.85	13.50
45682	Success Brand 1-8-4	Perryville	1.11		1.45	1.00	1.05		9.00	8.00	4.12	4.00	15.49	12.75
45683	10-5	Perryville					1.25		10.95	10.00	4.08	5.00	11.52	11.25
45684	Wheat & Grass	Perryville	.71		1.02	1.00	.40		9.00	8.00	2.32	2.00	12.40	11.25
	Massey & Kilbourne Co., Chestertown, Md.													
45654	Crop Producer	Chestertown	.51		.89	1.00	.75		10.35	9.00	3.32	3.00	13.74	12.75
45655	10-5 Superphos	Chestertown					.85		10.35	10.00	5.78	5.00	12.27	11.25
45656	12-5 Superphos	Chestertown					.80		12.80	12.00	4.42	5.00	13.08	12.75
	Miller Fertilizer Co., Balto., Md.													
45756	Acid Phosphate 16%	Baltimore					.35		16.55	16.00			12.48	12.00

45702 Clinch Phosphat

45702	Clinch Phosphate	Baltimore					.35		9.95	10.00	2.04	2.00	9.06	9.00
45711	Club Brand	Baltimore	.18		.61	.50	.50		8.80	8.00	2.04	2.00	10.52	9.38
45757	Grain Grower 1-8-4	Baltimore	.65		1.11	1.00	.45		8.85	8.00	4.32	4.00	14.13	12.75
45663	Grain Grower 1-8-4	New Windsor	.29		.89	1.00	1.35		9.15	8.00	4.40	4.00	13.77	12.75
45669	5-7-5	Preston	3.94	3.00	4.50	5.00	.20		8.50	7.00	5.12	5.00	27.14	27.75
45712	Harvest Queen 1-9-3	Baltimore	.68		1.11	1.00	.45		9.25	9.00	3.04	3.00	13.47	12.75
45713	Horst's Phosphate & Potash	Baltimore					.80		12.20	12.00	5.12	5.00	13.15	12.75
45732	2-8-5	Baltimore	1.57	1.00	2.01	2.00	.30		9.10	8.00	4.72	5.00	18.64	17.25
45773	12-5	Baltimore					1.05	.50	11.90	12.00	5.20	5.00	13.04	12.85
45774	Wheat & Grass Grower	Baltimore	1.70	1.00	2.18	2.00	.85		12.60	12.00	2.20	2.00	19.45	18.00
	Nitrate Agencies Co., Balto., Md.													
45758	Naco Brand Acid Phosphate	Baltimore					.10		15.80	16.00			11.87	12.00
	G. Ober & Sons Co., Balto., Md.													
45733	Acid Phosphate H. G.	Baltimore					.65		16.15	16.00			12.24	12.00
45775	Farmers' Mixture 1-9-2	Baltimore	.48	.34	.99	1.00	.85		10.35	9.00	2.24	2.00	13.32	12.00
45734	Farmers' Mixture 1-9-2	Baltimore	.49	.34	1.09	1.00	.45		11.15	9.00	2.36	2.00	14.31	12.00
45714	Golden Top Wheat & Corn Gro. 1-9-3	Baltimore	.65	.34	1.11	1.00	.50		10.20	9.00	3.00	3.00	14.16	12.75
45735	Lloyd's Mixture	Baltimore	.84	.51	2.03	1.50	4.50		15.95	10.00			20.47	13.13
45776	Pure Raw Bone Meal	Baltimore			4.41	4.50	*20.70	*21.00					28.96	29.48
45715	Special Plant Food	Baltimore	1.19		2.01	2.00	.45		9.90	9.00	5.00	5.00	18.81	18.00
45664	Standard Potash Compound 12-6	New Windsor					.90		12.20	12.00	6.40	6.00	14.13	13.50
45716	Standard Potash Compound 12-6	Baltimore					.75		12.05	12.00	6.20	6.00	13.84	13.50
45736	Superior Potato & Veg. Gro 2-8-10	Baltimore	1.09	.70	1.77	2.00	.60		8.00	8.00	10.16	10.00	20.38	21.00
	Peerless Fertilizer Co., Chestertown, Md.													
45644	Acid Phosphate 16%	Queen Anne					.20		17.30	16.00			13.02	12.00
45657	Acid Phosphate 16%	Chestertown					.20		17.20	16.00			12.94	12.00
45695	Acid Phosphate 14%	Chestertown					.85		15.70	14.00			11.95	10.50
45696	Acid Phosphate 18%	Chestertown					.18		19.32	18.00			14.53	13.50
45645	Ford's Ideal Fertilizer	Chestertown	.64		.98	.50	.70		8.00	8.00	4.46	3.00	13.17	10.13
45646	Imperial Compound Fertilizer	Chestertown	.93		1.19	1.00	.55		8.35	8.00	4.40	4.00	14.13	12.75
45699	Kainit 14%	Chestertown									15.72	14.00		
45647	Manure Salts	Queen Anne									20.58			
45700	Muriate of Potash	Chestertown									54.40	50.00		
45649	10-2 Fertilizer	Chestertown					.75		10.55	10.00	2.70	2.00	10.09	9.00
45650	12-5 Fertilizer	Centreville					.80		12.40	12.00	4.40	5.00	12.76	12.75
45651	Wheat Grower ½-10-5	Chestertown	.68		.87	.50	.65		10.55	10.00	5.08	5.00	15.11	13.13

*Total Phosphoric Acid.

No.	Name and Address of Manufacturer and Name of Fertilizer	Place of Sampling	H_2O. SOL. AMMONIA		NITROGEN Calculated as AMMONIA.		PHOSPHORIC ACID.				POTASH. K_2O.		Comparative Value Per Ton Found.	Comparative Value Per Ton Guaranteed
							Insoluble		Available					
			Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.		
	Piedmont-Mt. Airy Guano Co., Balto., Md.													
45725	Acid Phosphate 16%	Union Bridge					1.50		17.30	16.00			13.28	12.00
45703	Acid Phosphate 16%	Baltimore					1.65		16.05	16.00			12.37	12.00
46665	Acid Phosphate 16%	Union Bridge					1.45		15.95	16.00			12.25	12.00
45759	Ammoniated Fertilizer 1-9-3	Baltimore	1.39	.82	2.04	1.00	.70		10.00	9.00	3.72	3.00	18.08	12.75
45737	Excelsior 1-8-1	Baltimore	.40		1.08	1.00	1.60		9.20	8.00	1.20	1.00	12.17	10.50
45738	Farmers' Favorite	Baltimore	.53		1.04	1.00	1.20		8.40	8.00	3.80	4.00	13.29	12.75
45770	H. G. Amm'd. Phos. & Potash	Baltimore	2.01	1.00	2.78	3.00	.95		8.55	8.00	3.08	3.00	19.34	19.50
45726	Muriate of Potash	Union Bridge									52.00	50.00		
45739	Perfection Guano 2-8-5	Baltimore	1.44	.67	2.17	2.00	.80		8.30	8.00	5.40	5.00	18.58	17.25
45740	Phosphate & Lime	Baltimore					.20		15.05	13.00			11.33	9.75
45760	2-8-5 Fertilizer	Baltimore	1.62	.67	2.18	2.00	.75		8.15	8.00	5.04	5.00	18.22	17.25
45741	Wheat Compound 12-5	Baltimore					1.78		11.35	12.00	6.14	5.00	13.48	12.75
	Ramsburg Fertilizer Co., Frederick, Md.													
45639	Ammoniated Bone Phosphate	Frederick	.66	.85	1.09	1.00	2.85		9.95	10.00	2.48	2.00	13.75	12.75
45642	Excelsior Half & Half	Frederick	.46	.85	.80	1.00	2.70		11.60	10.00	1.46	1.00	13.34	12.00
45640	Old Virginia Compound	Frederick	.39		.82	1.00	2.65		10.35	8.00	3.48	4.00	13.98	12.75
45641	Queen	Frederick	.19	.43	.58	.50	1.40		13.15	10.00	1.32	1.00	13.31	10.13
45643	Williams' Wheat & Grass	Frederick	.60	.85	1.01	1.00	2.75		10.25	10.00	2.12	1.00	13.62	12.00
	Rasin-Monumental Co., Balto., Md.													
45742	Acid Phosphate 16%	Baltimore					.80		16.40	16.00			12.46	12.00
45743	Capital Crop Compound 1-9-3	Baltimore	.75	.49	1.06	1.00	1.90		9.20	9.00	3.20	3.00	13.66	12.75
45717	H. G. Phosphate & Potash 12-5	Baltimore					.60		12.60	12.00	5.80	5.00	13.92	12.75

45704	H. G. Phosphate & Potash 12-5..	Baltimore	.....	.....	.....	.....	1.05	.....	12.05	12.00	5.00	5.00	13.00	12.75
45761	Muriate of Potash.....	Baltimore	.....	.....	.....	.....	.....	.....	.....	.....	53.50	48.00	.....	.....
45744	National Crop Compound 1-8-4..	Baltimore	.85	.49	1.19	1.00	1.75	.....	9.25	8.00	4.12	4.00	14.84	12.75
45745	Phosphate & Lime Mixture.....	Baltimore	.....	.....	.....	.....	1.10	.....	13.70	13.00	.....	.....	10.50	9.75
45762	Pure Raw Bone	Baltimore	.....	.....	4.68	4.50	*21.75	*20.60	.....	.....	.....	.....	30.60	29.24
45718	Special Phosphate & Potash....	Baltimore	.....	.....	.....	.....	1.00	.....	10.10	10.00	5.36	5.00	11.80	11.25
45746	Universal Crop Manure 2-8-5....	Baltimore	1.72	.67	1.98	2.00	1.00	.....	8.80	8.00	5.04	5.00	18.01	17.25
	F. S. Royster Guano Co., Balto., Md.													
45763	Acid Phosphate 16%.....	Baltimore	.....	.....	.....	.....	1.45	.....	16.75	16.00	.....	.....	12.85	12.00
45747	Banner Guano 2-8-10.....	Baltimore	1.47	1.33	2.10	2.00	.70	.....	8.50	8.00	10.40	10.00	22.20	21.00
45706	Bully Guano	North East.....	1.47	1.33	2.00	2.00	1.00	.....	8.30	8.00	4.70	5.00	17.46	17.25
45777	Dreadnaught Guano 2-8-2.....	Baltimore	1.42	1.33	2.00	2.00	1.50	.....	8.30	8.00	2.24	2.00	15.71	15.00
45707	Dreadnaught Guano 2-8-2.....	North East.....	1.43	1.33	2.01	2.00	.95	.....	8.95	8.00	2.66	2.00	16.44	15.00
45765	Lime Phosphate	Baltimore	.....	.....	.....	.....	2.25	.....	13.85	13.00	.....	.....	10.84	9.75
45766	Phosphate & Potash 12-5.....	Baltimore	.....	.....	.....	.....	1.00	.....	13.40	12.00	5.20	5.00	14.15	12.75
45748	Phosphate & Potash 8-5.....	Baltimore	.....	.....	.....	.....	.95	.....	10.52	8.00	4.80	5.00	11.68	9.75
45708	Rational Guano 1-8-4.....	North East.....	.68	.55	1.09	1.00	.55	.....	9.25	8.00	3.70	4.00	13.92	12.75
	Scott Fertilizer Co., Elkton, Md.													
45685	Potato Grower 2-8-10.....	Elkton	1.57	1.00	2.08	2.00	.70	.....	8.50	8.00	10.24	10.00	22.00	21.00
45686	Potato & Truck Special.....	Elkton	1.50	.....	2.01	2.00	.95	.....	9.55	8.00	5.08	5.00	18.70	17.25
45687	Soluble Phos. & Potash.....	Elkton	.....	.....	.....	.....	.65	.....	12.25	12.00	5.00	5.00	13.07	12.75
45688	Soluble Phos. & Potash.....	Elkton	.....	.....	.....	.....	.50	.....	11.05	12.00	2.08	2.00	9.95	10.50
45709	Special Grain Grower.....	Elkton	.09	.....	.55	.50	.35	.....	8.45	8.00	3.62	4.00	11.19	10.88
45689	Sure Growth Super Phosphate..	Elkton	1.59	1.00	2.15	2.00	1.00	.....	8.90	8.00	3.24	3.00	17.37	15.75
45690	Tip Top Soluble 16% Phosphate	Elkton	.....	.....	.....	.....	1.90	.....	14.95	16.00	.....	.....	11.59	12.00
45710	Wheat & Grass.....	Elkton	.27	.....	.63	.50	.45	.....	9.35	8.00	2.04	2.00	10.99	9.38
	Summers Fertilizer Co., Inc., Balto., Md.													
45749	Phosphate & Potash Mixture....	Baltimore	.....	.....	.....	.....	.50	.....	12.60	12.00	4.77	5.00	13.13	12.75
	Superior Guano Co., Balto., Md.													
45366	Caroline Special 1-9-3.....	Baltimore	.38	.20	.99	1.00	.15	.....	9.15	9.00	3.56	3.00	13.27	12.75
45652	Caroline Special 1-9-3.....	Queenstown	.35	.20	.69	1.00	.20		8.90	9.00	4.40	3.00	12.61	12.75
45320	Caroline Special 1-9-3.....	Baltimore	.52	.20	1.01	1.00	.10	.....	9.05	9.00	3.24	3.00	13.03	12.75
	Swift & Company, Balto., Md.													
45727	Acid Phosphate 16%.....	Union Bridge.....	.....	.....	.....	.....	.15	.....	16.25	16.00	.....	.....	12.22	12.00
45691	Acid Phosphate 16%.....	Ridgely	.....	.....	.....	.....	.10	.....	16.15	16.00	.....	.....	12.13	12.00
45750	Champion Wheat & Corn Grower	Baltimore	1.57	1.30	1.98	2.00	.50	.....	12.00	12.00	2.24	2.00	18.21	18.00
45719	Farmers' Home 10-4.....	Baltimore	.....	.....	.....	.....	.05	.....	10.25	10.00	4.16	4.00	10.82	10.50
45767	Muriate of Potash.....	Baltimore	.....	.....	.....	.....	.....	.....	.....	.....	52.30	50.00	.....	.....

*Total Phosphoric Acid.

No.	Name and Address of Manufacturer and Name of Fertilizer	Place of Sampling	H_2O. SOL. AMMONIA		NITROGEN Calculated as AMMONIA.		PHOSPHORIC ACID.				POTASH. K_2O.		Comparative Value Per Ton Found.	Comparative Value Per Ton Guaranteed
							Insoluble		Available					
			Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.		
	Swift & Company, Balto., Md.													
45768	Red Steer 2-8-2	Baltimore	1.52	1.30	2.00	2.00	.15		8.75	8.00	2.08	2.00	15.65	15.00
45769	Red Steer 10-5	Baltimore					.10		10.30	10.00	5.00	5.00	11.50	11.25
45321	Special H. G. Phos. & Potash 12-5	Queenstown					.05		11.65	12.00	4.68	5.00	12.26	12.75
45653	Special H. G. Phos. & Potash 12-5	Queenstown					.15		12.15	12.00	4.28	5.00	12.35	12.75
45720	Special Phosphate & Potash 10-2	Baltimore					.20		11.00	10.00	2.08	2.00	9.85	9.00
45771	Special Wheat & Corn Grower	Baltimore	1.69	1.30	2.03	2.00	.20		10.10	10.00	4.04	4.00	18.26	18.00
45692	Special Wheat Grower 1-8-4	Ridgely	.75	.65	1.01	1.00	.10		7.90	8.00	4.04	4.00	12.77	12.75
45772	Two Nine Two	Baltimore	1.48	1.30	1.86	2.00	.30		9.00	9.00	2.08	2.00	15.35	15.75
45693	12-5	Ridgely					.10		12.10	12.00	4.40	5.00	12.40	12.75
	Thomas & Co., Frederick, Md.													
45728	Acid Phosphate 16%	Frederick					.20		17.50	16.00			13.17	12.00
45303	Acid Phosphate 16%	Adamstown					.20		14.30	16.00			10.77	12.00
45318	Alkaline Bone 12-5	Darnestown					.15		15.95	12.00	3.18	5.00	14.38	12.75
45637	Alkaline Bone 12-5	Gaithersburg					.15		15.95	12.00	1.90	5.00	13.42	12.75
45729	Blood & Bone	Frederick	.66		1.31	2.00	.35		12.25	8.00	4.04	2.00	17.20	15.00
45730	Crop Grower	Frederick	.61		1.19	1.00	.30		10.75	8.00	6.22	1.00	17.25	10.50
45731	Harvest Queen	Frederick	.67	.70	1.35	1.25	.30		11.70	10.00	4.76	2.00	17.47	13.69
	I. P. Thomas & Son Co., Phila, Pa.													
45694	Ammoniated Fish Base	Colora	1.31		2.03	2.00	2.50		7.30	8.00	2.64	2.00	15.57	15.00
	W. B. Tilghman Co., Salisbury, Md.													
45670	Acid Phosphate 16%	Salisbury					.35		16.65	16.00			12.56	12.00
45671	Bone Tankage Mixture	Salisbury	1.40		2.13	2.00	.55		10.35	9.00	4.00	3.00	18.86	16.50
45672	Early Truck Guano													

45672	Early Truck Guano	Salisbury	4.24	3.29	5.04	5.00	.35	9.25	8.00	5.28	5.00	29.87	28.50
45673	H. G. Potash Mixture	Salisbury	1.56	1.00	2.31	2.00	.60	8.70	8.00	9.64	10.00	22.54	21.00
45674	Irish P Guano	Salisbury	6.13	4.00	7.46	7.00	.65	6.65	6.00	5.20	5.00	37.00	34.50
45675	Mixture "B" 4-8-4	Salisbury	3.09	2.25	4.01	4.00	.80	8.30	8.00	4.28	4.00	24.64	24.00
45676	Special 3-7-7	Salisbury	2.23	1.64	3.19	3.00	.70	8.40	7.00	7.98	7.00	24.39	21.75
45677	Special 2-8-5	Salisbury	1.75	1.00	2.72	2.00	.95	9.15	8.00	6.52	5.00	18.39	17.25
	E. S. Valiant & Son, Centreville, Md.												
45659	Big Three	Centreville	.74	.75	1.08	1.00	.80	9.50	9.00	3.20	3.00	13.74	12.75
45660	Grain Grower	Centreville	.33	.....	.65	.50	.60	9.40	8.00	2.40	2.00	11.41	9.38
45661	Oriole	Centreville	.32	.....	.63	.50	.30	10.20	9.00	4.00	4.00	13.07	11.63
45662	12-5	Centreville	.....	.....	.....	.....	.30	13.20	12.00	5.00	5.00	13.71	12.75
	Virginia-Carolina Chemical Co., Balto., Md.												
45721	Acid Phosphate 16%	Baltimore	.....	.....	.....	.....	.65	16.05	16.00	.....	.....	12.17	12.00
45751	Challenge Brand 1-9-3	Baltimore	.84	.49	1.08	1.00	1.25	10.25	9.00	3.00	3.00	14.24	12.75
45722	Fish, Bone & Potash 2-8-3	Baltimore	1.41	.31	2.06	2.00	1.90	9.00	8.00	3.28	3.00	17.32	15.75
45723	National Amm'd. Guano 1-8-4	Baltimore	.77	.49	1.11	1.00	2.20	8.80	8.00	3.80	4.00	14.05	12.75
45705	Phosphate & Lime	Baltimore	.....	.....	.....	.....	1.00	13.50	13.00	.....	.....	10.33	9.75
45752	Roan Steer Guano 2-12-2	Baltimore	1.88	.....	2.12	2.00	2.00	12.10	12.00	2.28	2.00	19.14	18.00
45778	Spec. Phosphate & Potash 10-5	Baltimore	.....	.....	.....	.....	.40	10.60	10.00	4.64	5.00	11.51	11.25
45724	Spec. Phosphate & Potash 10-5	Baltimore	.....	.....	.....	.....	.50	10.50	10.00	5.00	5.00	11.73	11.25
45753	Standard Crop Grower	Baltimore	1.78	.67	2.00	2.00	1.68	7.22	8.00	2.20	2.00	14.91	15.00
45754	Standard Grain Grower 1-8-2	Baltimore	.77	.49	1.08	1.00	1.65	8.15	8.00	2.24	2.00	12.17	11.25
45755	Standard Phosphate & Potash	Baltimore	.....	.....	.....	.....	.55	10.05	10.00	2.04	2.00	9.18	9.00
	Westminster Fertilizer Co., Westminster, Md.												
45666	Governor	Westminster	1.18	.....	1.59	1.50	1.00	12.30	11.00	3.48	3.00	18.00	16.13
45667	Leader	Westminster	.65	.....	1.14	1.00	.60	9.80	10.00	3.40	3.00	14.30	13.50
45668	Super-A	Westminster	.60	.....	1.06	1.00	.05	10.35	10.00	2.28	2.00	13.46	12.75
	Worcester Fertilizer Co., Snow Hill, Md.												
45679	Acid Phosphate 16%	Snow Hill	.....	.....	.....	.....	.30	16.95	16.00	.....	.....	12.77	12.00
45680	Fish, Bone & Potash	Snow Hill	1.04	.67	2.01	2.00	.55	9.00	8.00	2.04	2.00	15.93	15.00

FERTILIZER LAW OF MARYLAND

IN EFFECT JUNE 1, 1922.

SECTION 1. The term "fertilizer" as used in this Act shall mean any commercial fertilizer, or any article, substance or mixture sold, offered or exposed for sale, for manurial purposes in the State of Maryland of which the selling price shall be more than $5.00 per ton of two thousand pounds, but shall not include ground gypsum, lime, ground limestone, ground shells, dung of all poultry or dung of domestic animals, in bulk, when sold as such and when not mixed with other fertilizer or fertilizer materials. The term "State Chemist" shall mean the professor in charge of the Chemical Department of the University of Maryland, who shall be ex-officio State Chemist. The term "brand" shall mean the full name, brand and trade-mark under which a fertilizer is sold, together with a statement of the percentage of the valuable ingredients contained in said fertilizer.

SEC. 2. That every manufacturer, jobber, or manipulator of commercial fertilizer, and materials used in the manufacture of the same, who may desire to sell or offer for sale in the State of Maryland such fertilizer or fertilizer materials before offering the same for sale shall file or register with the University of Maryland upon forms furnished by said University the name of each and every brand of fertilizer which it is desired to sell in the said State by any said manufacturer, jobber, or manipulator, or their agents, together with the name and address of said manufacturer, jobber, or manipulator, and the guaranteed analysis of said fertilizer stating the sources from which the nitrogen, phosphoric acid and potash are derived; the statement as to the sources of the plant foods shall be made in terms of the percentages making up the total per cent of each.

Before any person or firm shall sell or offer for sale any pure or mixed Culture of Micro-Organism or other material to be used for promoting directly or indirectly the growth of higher plants, he or they shall secure a permit and shall file or register with the University of Maryland a statement under oath, specifying the composition of the substance, and the kind of Micro-Organisms contained therein which promotes the growth of higher plants, and they shall pay to the

University of Maryland a permit and registration fee of $10.00 per brand. The University of Maryland shall have power to refuse or cancel such permit whenever any culture or Micro-Organisms or any other material used for promoting the growth of plants is sold under false or misleading claims.

SEC. 3. That every importer, manufacturer, manipulator, dealer or agent before selling, offering or exposing for sale, within the State of Maryland any fertilizer shall pay to the University of Maryland a fee of $10.00 per brand for each brand registered under Section 2 of this Act and on or before December 31st, of each year shall file with the University a statement, made under oath in due form of law, giving the total number of tons of fertilizer sold during that calendar year in the State of Maryland, and shall pay thereon an inspection tax of ten cents per ton; provided, however, goods sold in bulk to manufacturer, manipulators, or mixers for resale, of fertilizers shall not be subject to the said tax of ten cents per ton; provided further that where the tonnage tax paid in any one calendar year is in excess of the brand tax of $10.00 above provided the said brand tax shall be rebated; and provided further that when any manufacturer, dealer or importer has paid the required inspection fees no other person selling the same goods under his name and brand shall be required to pay such fee.

SEC. 4. That every bag, barrel, or package of fertilizer must bear plainly and conspicuously on the outside of same, and every parcel or lot sold in bulk must be accompanied by a clear and true statement in legible print, in the order herein stated, the following:

The net weight of the contents of the package or lot in pounds;

Brand name or trade-mark;

Grade (as 2-10-2) namely, 2% of Ammonia, 10% Phosphoric Acid, and 2% Potash.

Guaranteed analysis in percentages:

Total nitrogen and/or its equivalent to Ammonia (NH_3);

Water Soluble Nitrogen and/or its equivalent to Ammonia (NH_3);

Available Phosphoric Acid;

Water Soluble Potash (K_2O);

Name and address of manufacturer.

In lieu of the available phosphoric acid above stated, the soluble phosphoric acid, and the reverted phosphoric acid, and the minimum of insoluble phosphoric acid may be given, and the maximum per cent of chlorine shall be given. In the case of unacidulated bone, tankage, fish or other animal, or vegetable matter, used as fertilizer, it shall be lawful to guarantee the phosphoric acid as total phosphoric acid; provided, however, that in the statement of the guaranteed analysis the minimum percentage only of the valuable constituents shall be given. It shall be unlawful to brand as pure bone any mixture in which any part of the phosphoric acid is from sources other than bone.

SEC. 5. That it shall be unlawful to sell, offer or expose for sale for fertilizer purposes any raw, or untreated, leather, hair, wool waste, hoof, horn, peat, cyanogen compounds, muck, tartar pomace, mora meal, or similar materials, either as such or mixed with other fertilizer materials; provided, however, that this section shall not apply to such material as has been treated in a manner to make available the essential fertilizer constituents which it may contain; and provided further that the section shall not apply to the raw materials hereinbefore enumerated which are consigned to, or offered for sale in bulk, to manipulators, or manufacturers of fertilizers.

SEC. 6. That the words "High Grade" shall not appear upon any bag or package of any complete fertilizer containing, according to its guaranteed analysis, less than 1.65% of nitrogen (equivalent to 2% of ammonia), 10% of available phosphoric acid and 2% of potash.

SEC. 7. That each and every brand of fertilizer, or fertilizer material, filed with the University of Maryland must remain uniform with the guaranteed analysis of said brand, and in no case, even at a subsequent registration, shall the grade be lowered by reducing any, or all, of the several constituents contained therein.

SEC. 8. That it shall be the duty of the University of Maryland to procure for analysis one or more samples in each year, as far as practicable, of all fertilizers sold, offered for sale or used in the State of Maryland, and the State Chemist, or any agent or representative, duly authorized by him, or by the University of Maryland, shall have the right to take samples from any lot, or parcel, or fertilizer in the possession, or in the keeping of any manufacturer, manipulator, dealer, agent, consumer or transportation company in said State of Maryland, and it shall be the duty of the University of Maryland to publish at least semi-annually the results of the analysis made by the said Uni-

versity of the samples procured by or sent to it for such purpose, and when reporting, or publishing the result of any analysis to state the approximate commercial value in dollars and cents of the fertilizer so analyzed per ton of two thousand pounds, such value to be based upon the analysis made at the said University and upon a standard of valuation to be ascertained, fixed and published by said University as above provided after conference with the proper officials of adjacent States.

SEC. 9. Any purchaser of fertilizer, or fertilizers, provided he is not a manufacturer, or manipulator, or agent, of the same, may have taken, in the presence of a disinterested witness, a sample, or samples, of said fertilizer, and forward the same with all transportation charges prepaid to the University of Maryland for analysis, provided that samples so taken shall be from unbroken bags, or packages, which have not been damaged or injured in transit, or by exposure, and which have not been in possession of the owner more than thirty (30) days, provided, further, that said samples be taken from at least 5% of the bags or packages comprising the brand purchased, and if there are less than 100 bags, or packages, of the brand so purchased samples shall be taken from not less than five bags, or packages, and if there are less than five bags or packages samples shall be taken from each. All such samples shall be taken under such additional rules and regulations as may be prescribed by the University of Maryland, provided further, that every sample sent for analysis to the said University shall be fully described on forms to be furnished by said University free of charge, said description giving a full and complete statement of the time and place of sampling, of all marks on the bags or packages thereof, and of all the facts relating to the same, said description and statement shall be signed by the purchaser of the fertilizer, the person drawing the sample and the disinterested witness or witnesses as above provided, and provided further, that the purchaser, or purchasers, sending such sample, or samples, of fertilizer to said University for analysis shall withhold said description or descriptions of said sample or samples until he has received from the said University of Maryland the report of the analysis of said fertilizer. Any person or persons receiving an analysis from the said University as required under this Act shall immediately thereafter forward to it the statement required by this Act to be made at the time of taking the sample or samples.

SEC. 10. That it shall be the duty of the University of Maryland to analyze upon request, without cost or charge, all samples of fertilizer sent to said University and taken in the manner prescribed in

In lieu of the available phosphoric acid above stated, the soluble phosphoric acid, and the reverted phosphoric acid, and the minimum of insoluble phosphoric acid may be given, and the maximum per cent of chlorine shall be given. In the case of unacidulated bone, tankage, fish or other animal, or vegetable matter, used as fertilizer, it shall be lawful to guarantee the phosphoric acid as total phosphoric acid; provided, however, that in the statement of the guaranteed analysis the minimum percentage only of the valuable constituents shall be given. It shall be unlawful to brand as pure bone any mixture in which any part of the phosphoric acid is from sources other than bone.

SEC. 5. That it shall be unlawful to sell, offer or expose for sale for fertilizer purposes any raw, or untreated, leather, hair, wool waste, hoof, horn, peat, cyanogen compounds, muck, tartar pomace, mora meal, or similar materials, either as such or mixed with other fertilizer materials; provided, however, that this section shall not apply to such material as has been treated in a manner to make available the essential fertilizer constituents which it may contain; and provided further that the section shall not apply to the raw materials hereinbefore enumerated which are consigned to, or offered for sale in bulk, to manipulators, or manufacturers of fertilizers.

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versity of the samples procured by or sent to it for such purpose, and when reporting, or publishing the result of any analysis to state the approximate commercial value in dollars and cents of the fertilizer so analyzed per ton of two thousand pounds, such value to be based upon the analysis made at the said University and upon a standard of valuation to be ascertained, fixed and published by said University as above provided after conference with the proper officials of adjacent States.

SEC. 9. Any purchaser of fertilizer, or fertilizers, provided he is not a manufacturer, or manipulator, or agent, of the same, may have taken, in the presence of a disinterested witness, a sample, or samples, of said fertilizer, and forward the same with all transportation charges prepaid to the University of Maryland for analysis, provided that samples so taken shall be from unbroken bags, or packages, which have not been damaged or injured in transit, or by exposure, and which have not been in possession of the owner more than thirty (30) days, provided, further, that said samples be taken from at least 5% of the bags or packages comprising the brand purchased, and if there are less than 100 bags, or packages, of the brand so purchased samples shall be taken from not less than five bags, or packages, and if there are less than five bags or packages samples shall be taken from each. All such samples shall be taken under such additional rules and regulations as may be prescribed by the University of Maryland, provided further, that every sample sent for analysis to the said University shall be fully described on forms to be furnished by said University free of charge, said description giving a full and complete statement of the time and place of sampling, of all marks on the bags or packages thereof, and of all the facts relating to the same, said description and statement shall be signed by the purchaser of the fertilizer, the person drawing the sample and the disinterested witness or witnesses as above provided, and provided further, that the purchaser, or purchasers, sending such sample, or samples, of fertilizer to said University for analysis shall withhold said description or descriptions of said sample or samples until he has received from the said University of Maryland the report of the analysis of said fertilizer. Any person or persons receiving an analysis from the said University as required under this Act shall immediately thereafter forward to it the statement required by this Act to be made at the time of taking the sample or samples.

SEC. 10. That it shall be the duty of the University of Maryland to analyze upon request, without cost or charge, all samples of fertilizer sent to said University and taken in the manner prescribed in

this Act. The said University, the State Chemist, or his assistants or agents, shall not demand of any purchaser so sending sample, or samples, for analysis any advice, information or statement as to any analysis appearing on the original unbroken packages, or bags, from which said sample or samples were taken, or the name or names of any individual, representative, agent or corporation or firm from which said fertilizer, or fertilizers, were purchased; and it shall be the duty of the said University through its duly authorized agent, the State Chemist, appointed by the State Board of Agriculture, to at once make a full and complete analysis of the sample, or samples, received in accordance with this provision and within thirty (30) days thereafter return to such person, or persons, from whom the sample, or samples, were received a full and complete analysis of said sample or samples. It shall be unlawful for any individual, representative or agent of any corporation or firm, or any corporation or firm itself, either directly or indirectly, to have any communication with the said University, or its chemists, agents or representatives, or the sender of any sample to said University, regarding the analysis of any fertilizer, or fertilizers, sent to the said University by the purchaser or purchasers thereof for analysis until after the report of said analysis. The University of Maryland, the State Chemist, their agents or representatives, shall not furnish any information or communicate with any manufacturer of fertilizer, about any such sample submitted for analysis until after a report of the analysis so made shall have been duly furnished to the applicant for such analysis.

SEC. 11. That any purchaser of fertilizer who shall be injured, or defrauded, by the failure of the contents of any bag, barrel, or other package of fertilizer, or any fertilizer in bulk, to conform to the statement of the quantity, quality, marks, labels on or accompanying the same, or filed with the University of Maryland, or who shall purchase fertilizer branded, "pure bone" when the same is adulterated with oyster shell or other foreign matter, even if the analysis corresponds to the guaranteed analysis on the package, may recover from the seller, or sellers, thereof in an action of debt an amount equal to the purchase money of said fertilizer and cost of suit, and in case the purchase is made of an agent, or any person, or persons, residing out of the limits of the State of Maryland, or any company, or corporation, whose principal place of business is out of the State of Maryland, the purchaser may at his, or her, option proceed by attachment as now provided for by law in case of non-resident and absconding debtors, against any property, rights or credits or any person, or persons, company, or corporation, furnishing said fertilizer when such property rights, or credits, can be found within the State of Maryland; pro-

vided, the purchaser of any fertilizer shall not be deemed to be defrauded by a shortage in the constituents of said fertilizer when the said shortage does not exceed 5% of the amount guaranteed, but on account of said shortage shall be entitled to recover as liquidated damages the amount of the commercial value of said shortage, provided, however, should said shortage be more than 5% of the commercial value guaranteed that the purchaser shall be entitled to recover as liquidated damages twice the amount of the shortage in commercial value and provided further should a shortage in one or more constituents exceed one-fifth of the guaranteed analysis the purchaser shall be entitled to recover, as liquidated damages twice the commercial value of said shortage without any compensation being allowed for any excess in other constituent or constituents except however in no event shall the purchaser be entitled to recover an amount in excess of the purchase price of said fertilizer.

SEC. 12. That the inspection and brand fees provided for in this Act shall be paid to the University of Maryland, and disbursed by it. to cover the cost of the analysis, inspection, sampling, printing, and for the dissemination of information regarding the contents and the analysis of fertilizers subject to this Act, the use and compounding of commercial fertilizers, and the administration and the enforcement of the provisions of this Act, and such other expenses as may be incurred in the development of the chemical work at the University of Maryland in relationship to this Act.

SEC. 13. That the University of Maryland shall have authority to establish rules and regulations in regard to the inspection, analysis, sale of fertilizers and fertilizer materials, and the publication of all information authorized herein, to the end that the provisions of this Act may be effectively administered and enforced.

SEC. 14. That the brand fee as provided in this Act shall not apply to any fertilizer mixed according to a formula furnished by a consumer; provided, in lieu of the registration, all packages of fertilizers shall be plainly marked, or tagged, on the outside of the package with the words "Mixed to Order," together with a statement thereon of the guaranteed analysis, and in all the other particulars said mixed fertilzer shall conform to the provisions of this Act.

SEC. 15. That every person, firm, corporation or association, guilty of a violation of any of the provisions contained in Sections Nos. 2, 4, 5, 6, 7 and 9 of this Act, and every officer, manager, director, or managing agent of any such person, firm, corporation or association, directly

participating in such violation, or consenting thereto, shall be punishable by a fine of $100.00 for the first offense, and, upon a second conviction, shall be punished by a fine of $500.00 or imprisonment for not more than three months, or both, at the discretion of the court. And it shall be the duty of the State's Attorneys of the several counties of this State to prosecute all violations of any of the provisions contained in said Sections Nos. 2, 4, 5, 6, 7 and 9 brought to their attention, said prosecutions to be in the name of the State of Maryland, and the penalty recovered, when paid, to be turned into the fertilizer fund of the University of Maryland.

SEC. 16. That if any person, firm, or corporation, subject to the provisions of this Act shall fail to file the statement required in Section No. 3 herein regarding the tons of fertilizer sold, and to pay the inspection fee, provided therefor in this Act, within sixty (60) days after the close of the calendar year, the same shall subject said person, firm, or corporation, to a penalty, upon conviction, of one hundred dollars, and two hundred dollars for each subsequent week that said inspection fee remains unpaid. Prosecution therefor to be entrusted to the State's Attorneys as in the preceding section provided and brought in the name of the State of Maryland and the penalty recovered when paid, to be turned into the fertilizer fund of the University of Maryland.